



Appendix A

RF Test Data for BT(BDR/EDR) (Conducted Measurement)

Product Name: Levitating Bluetooth Speaker

Trade Mark:

Test Model: WB-91

Environmental Conditions

Temperature:	18.9℃
Relative Humidity:	51.6%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen



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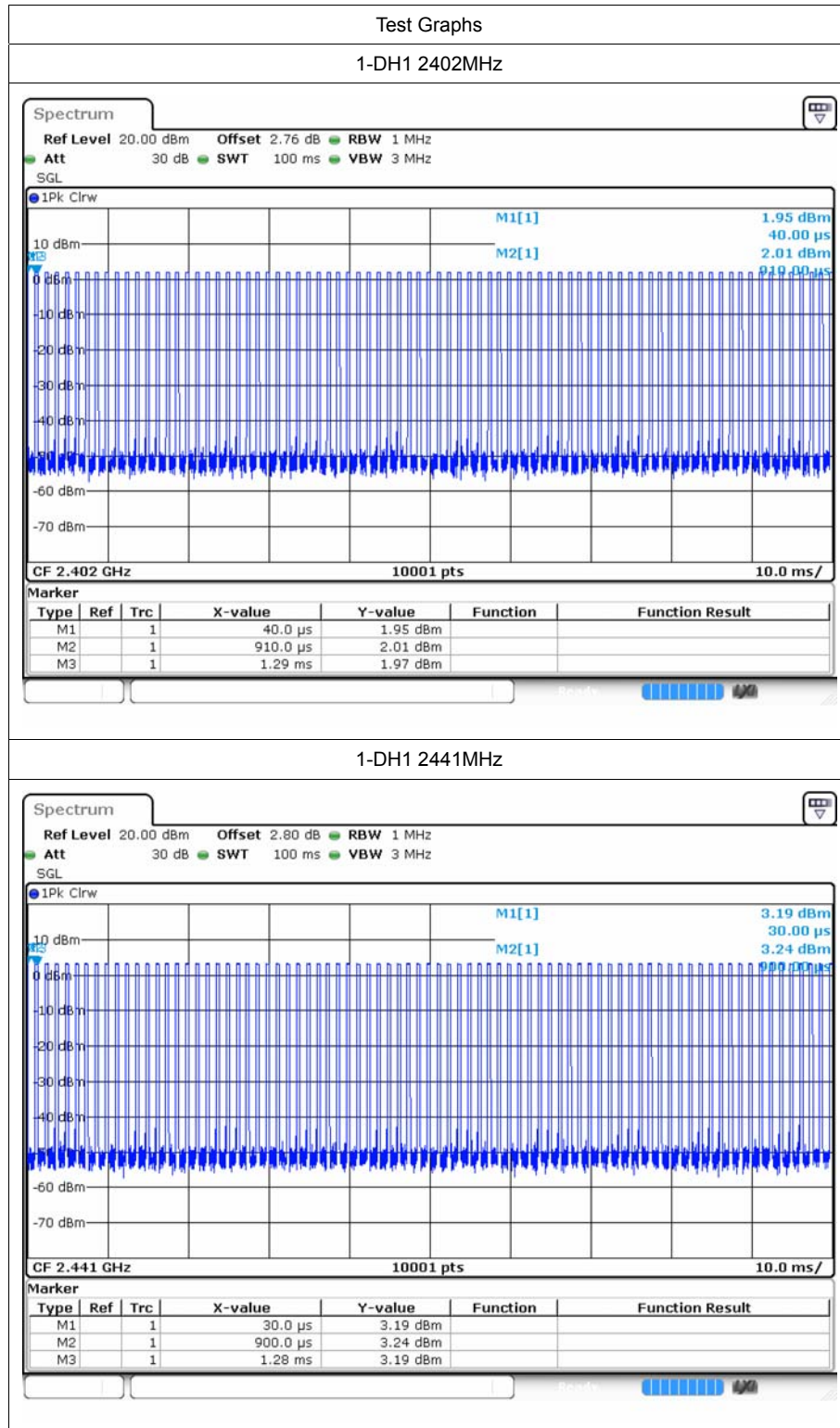


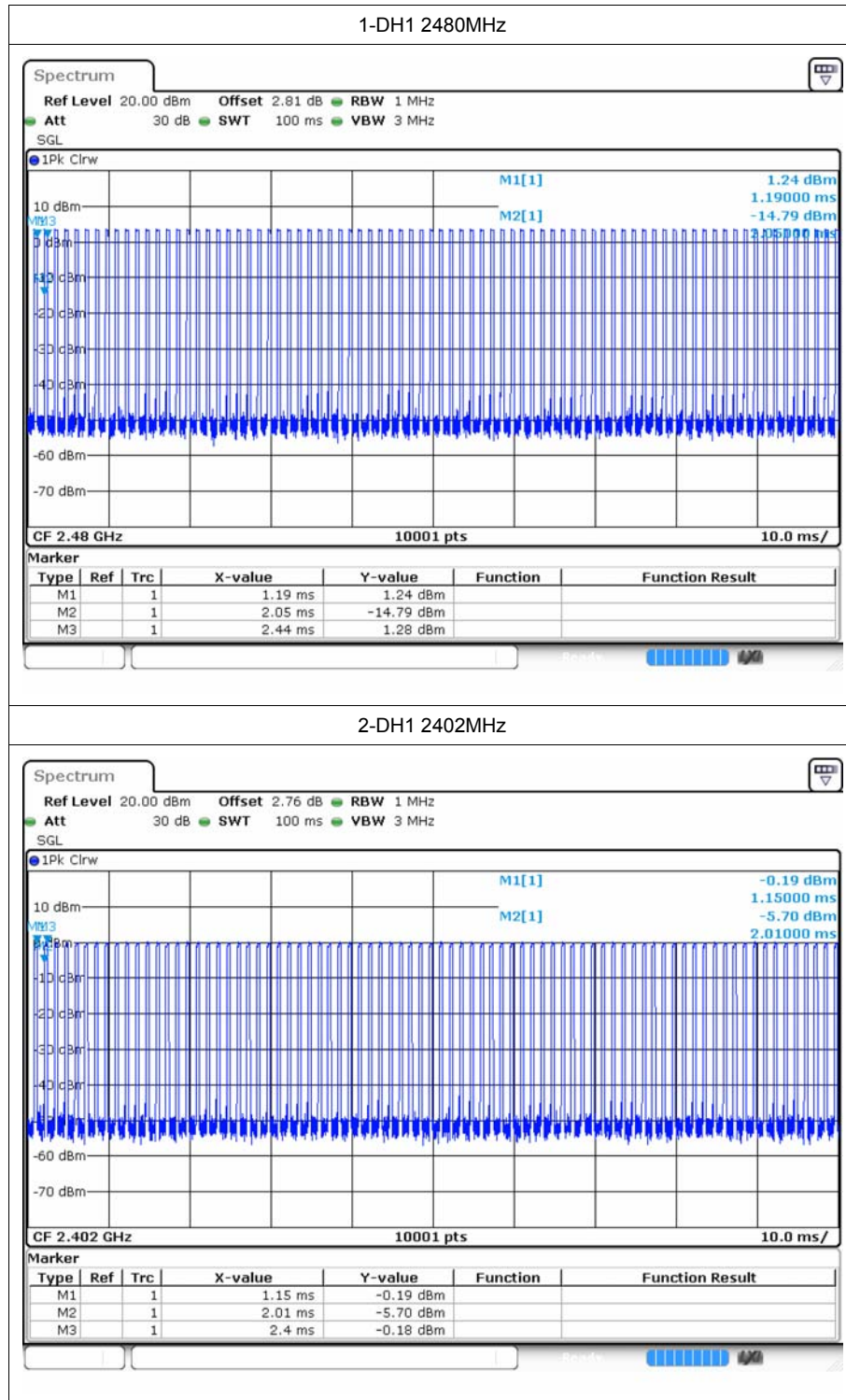
1 Duty Cycle

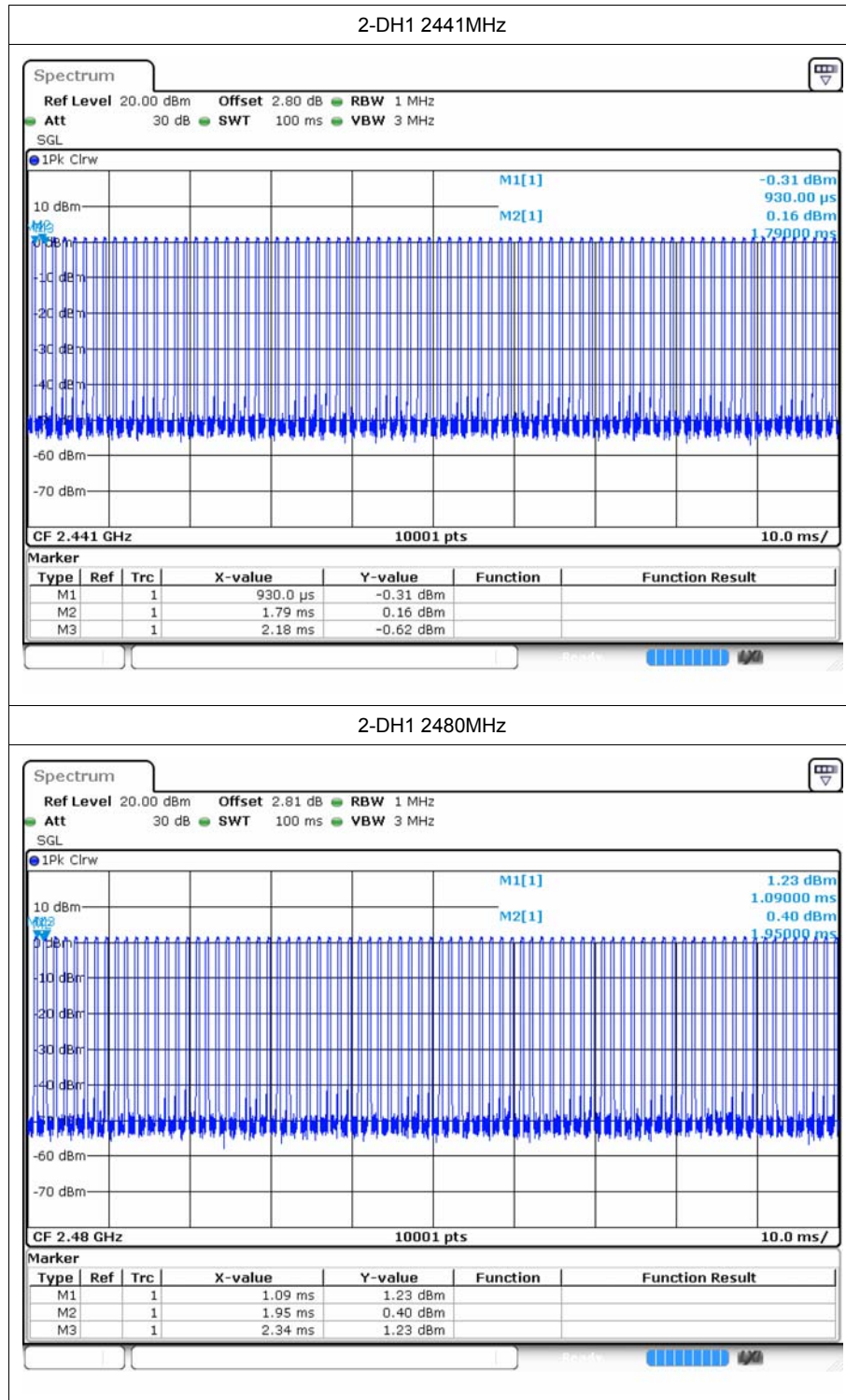
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
1-DH1	2402	31.68	2.63
1-DH1	2441	31.44	2.63
1-DH1	2480	31.4	2.56
2-DH1	2402	32.05	2.56
2-DH1	2441	32	2.56
2-DH1	2480	32	2.56

1.2 Test Graphs





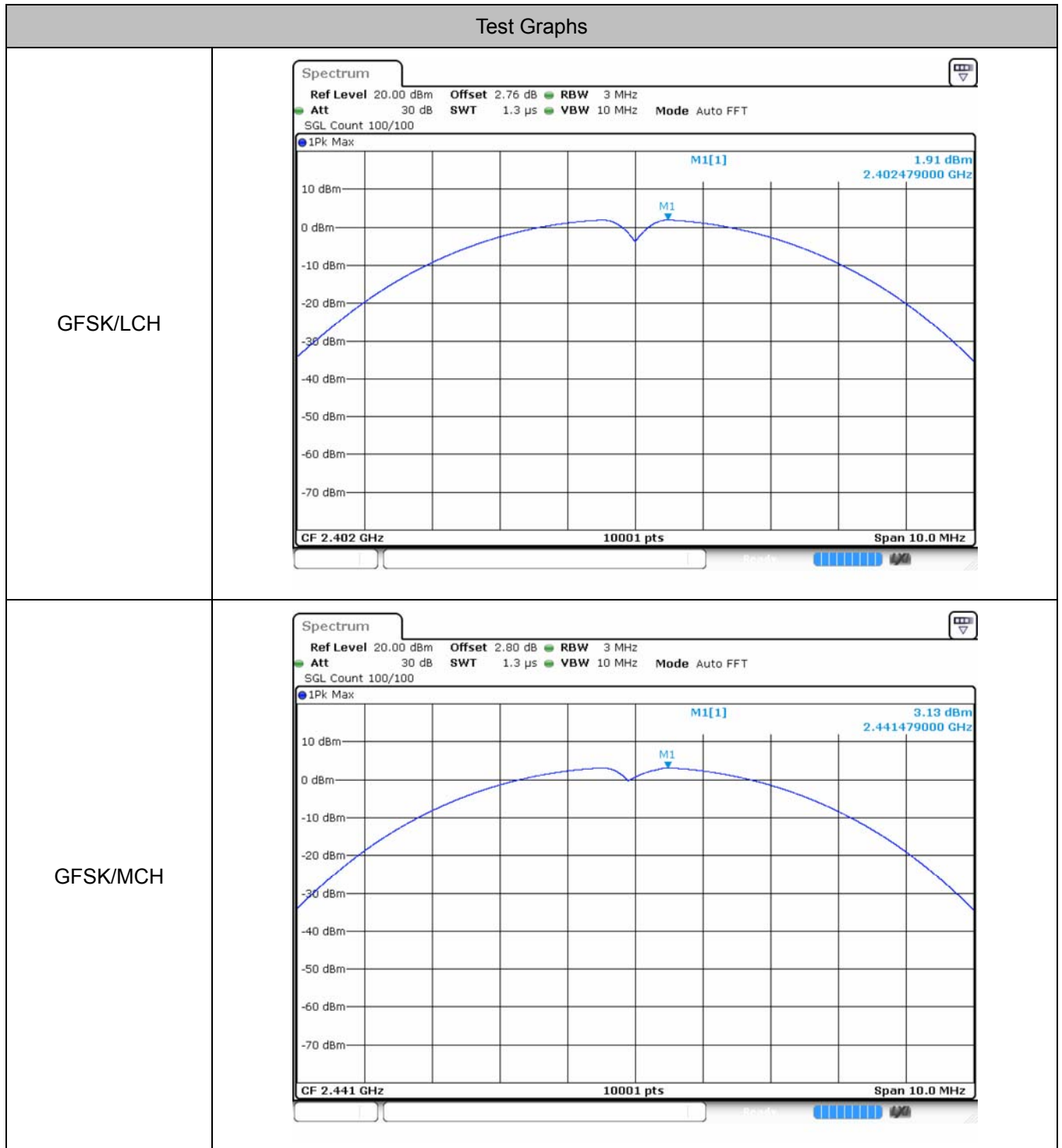


2 Maximum Conducted Peak Output Power

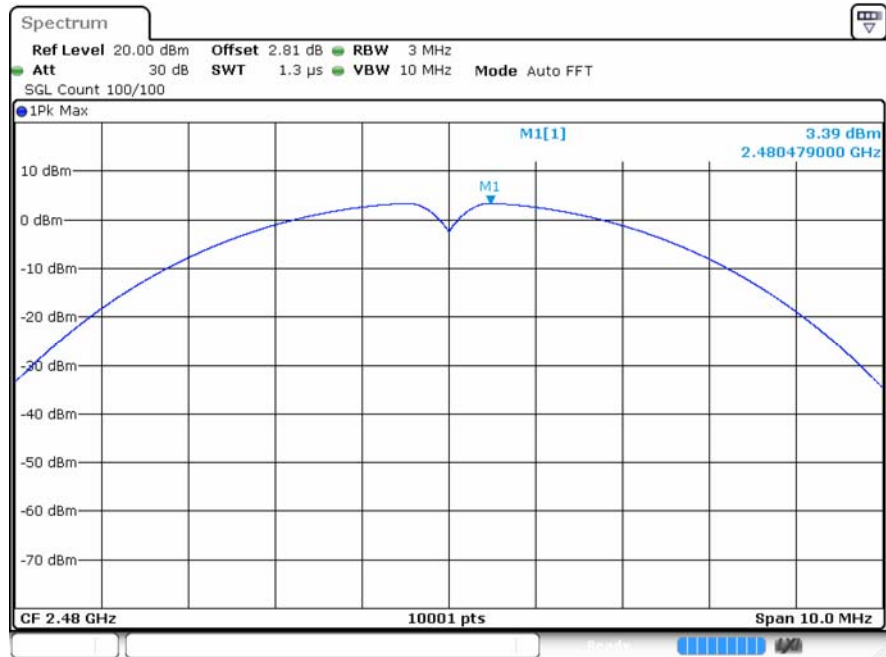
2.1 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.91	21	Pass
	MCH	3.13	21	Pass
	HCH	3.39	21	Pass
$\pi/4$ DQPSK	LCH	1.06	21	Pass
	MCH	2.17	21	Pass
	HCH	2.6	21	Pass

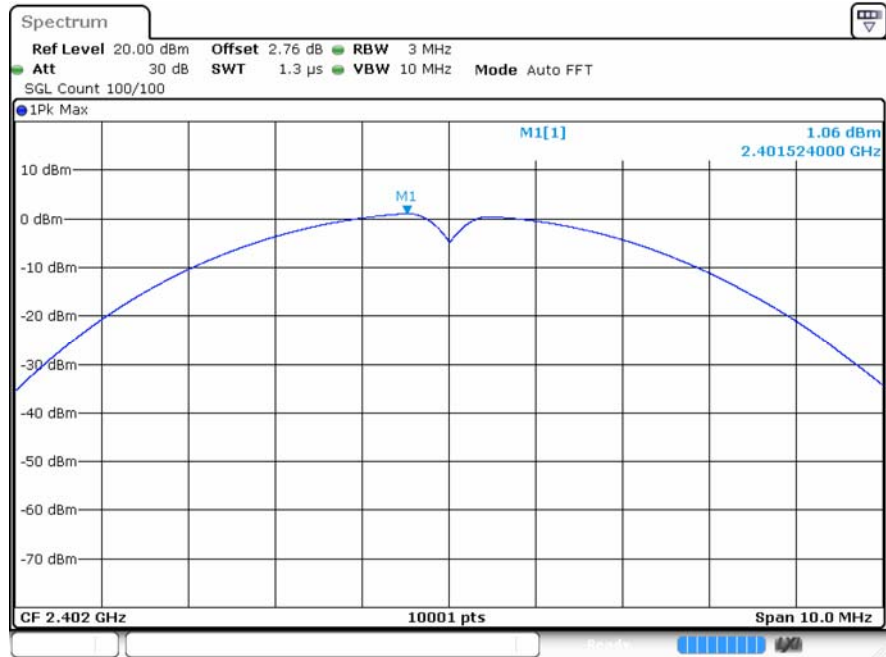
2.2 Test Graphs



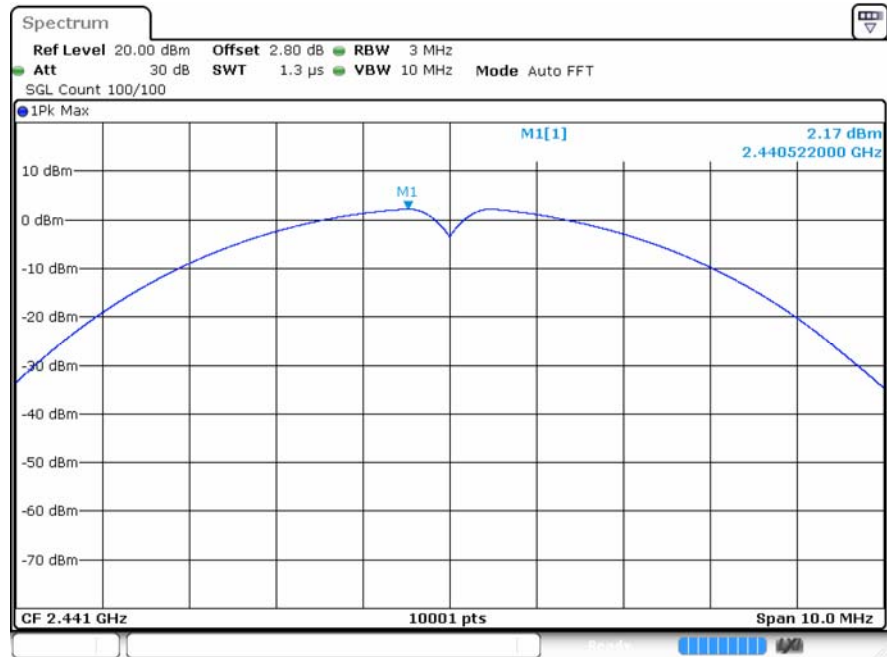
GFSK/HCH



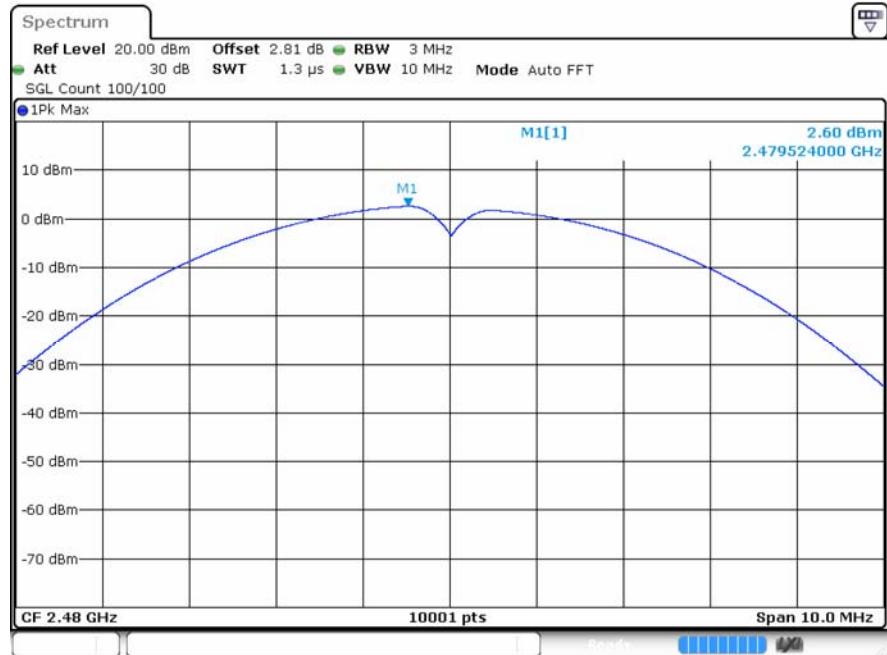
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

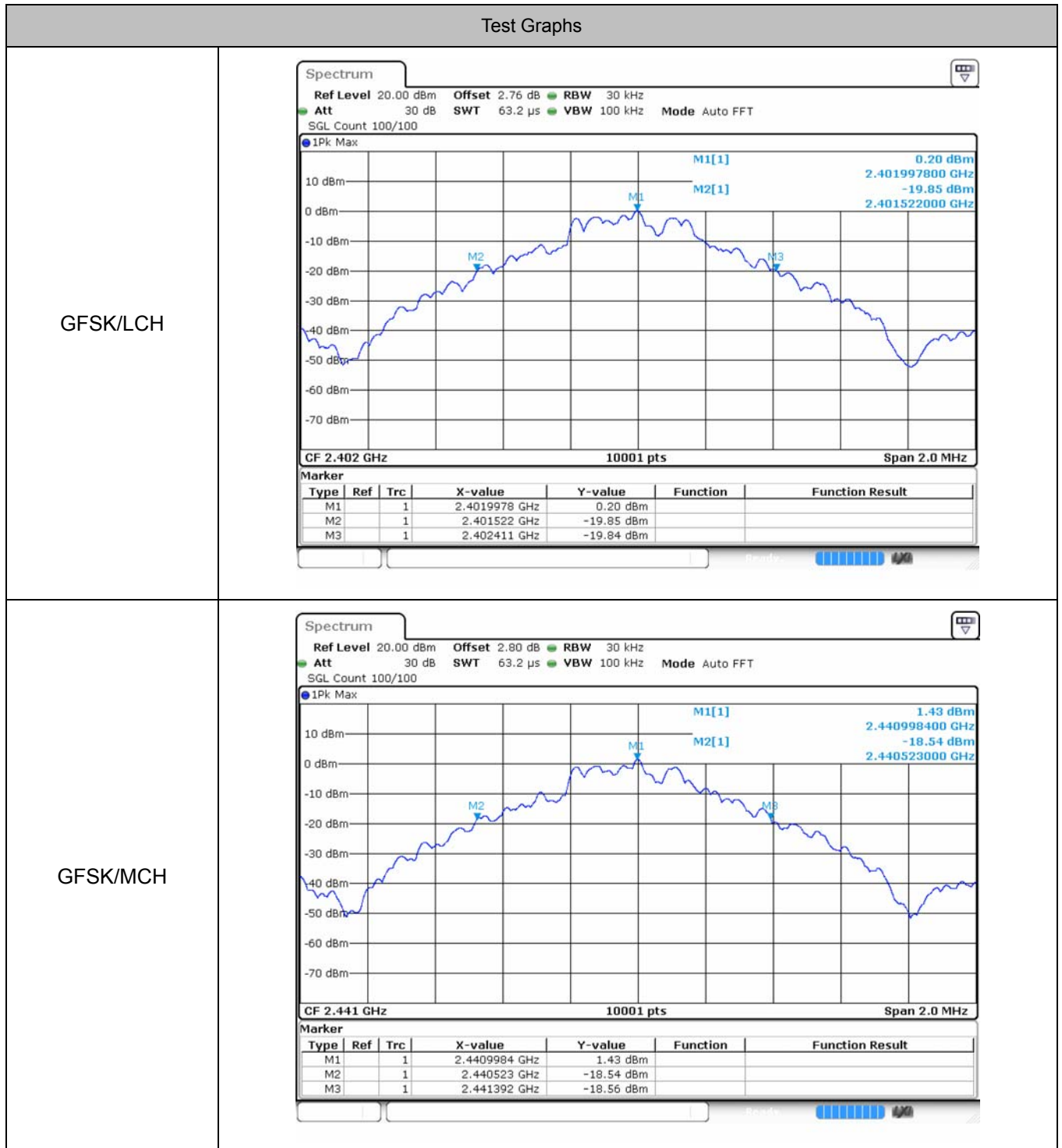


3 20dB Bandwidth

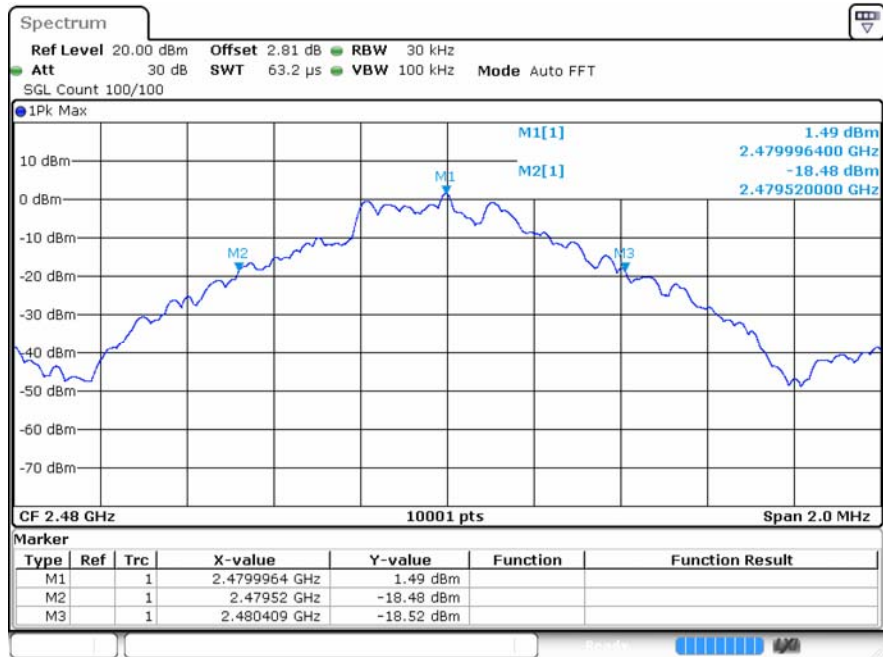
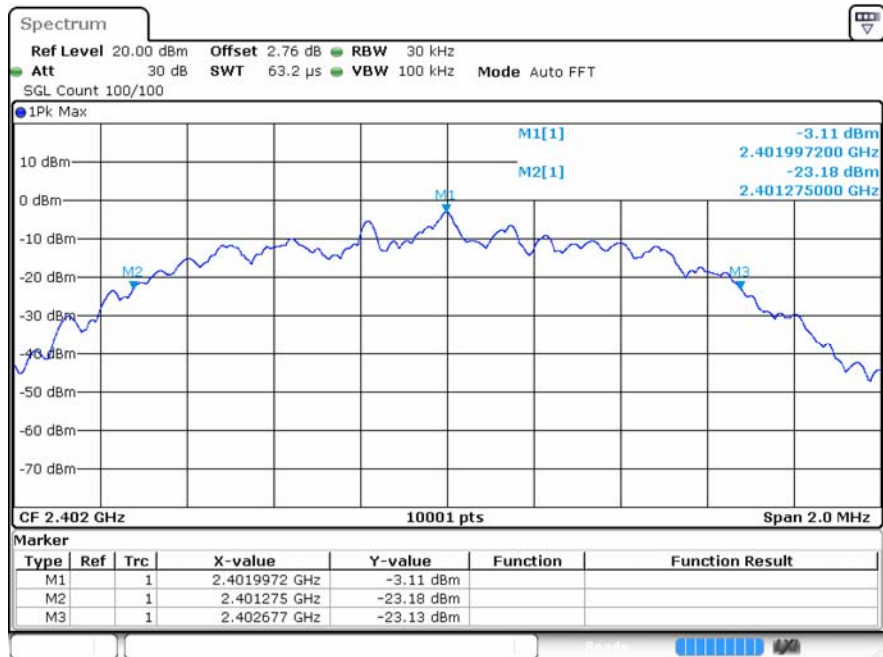
3.1 Test Result

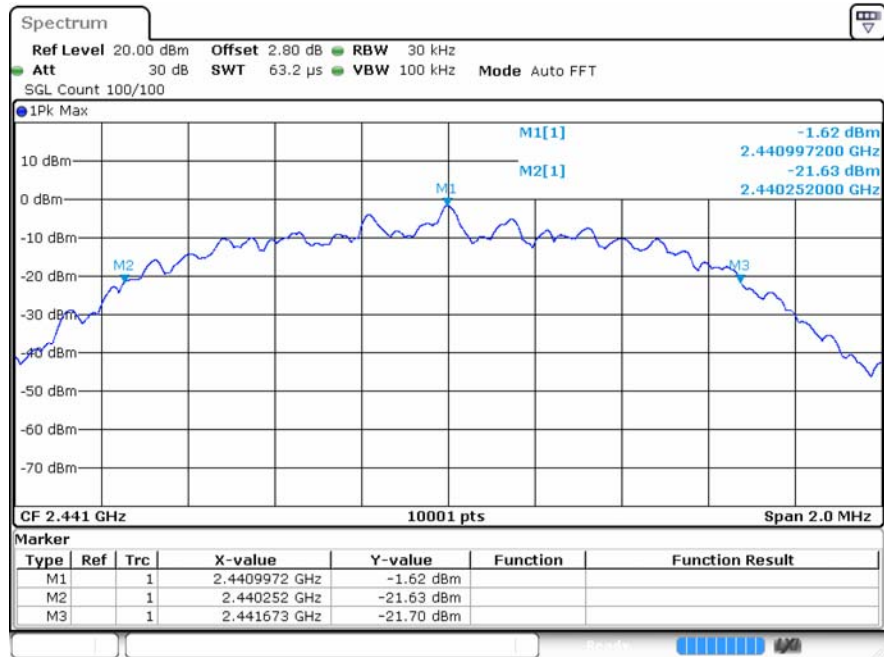
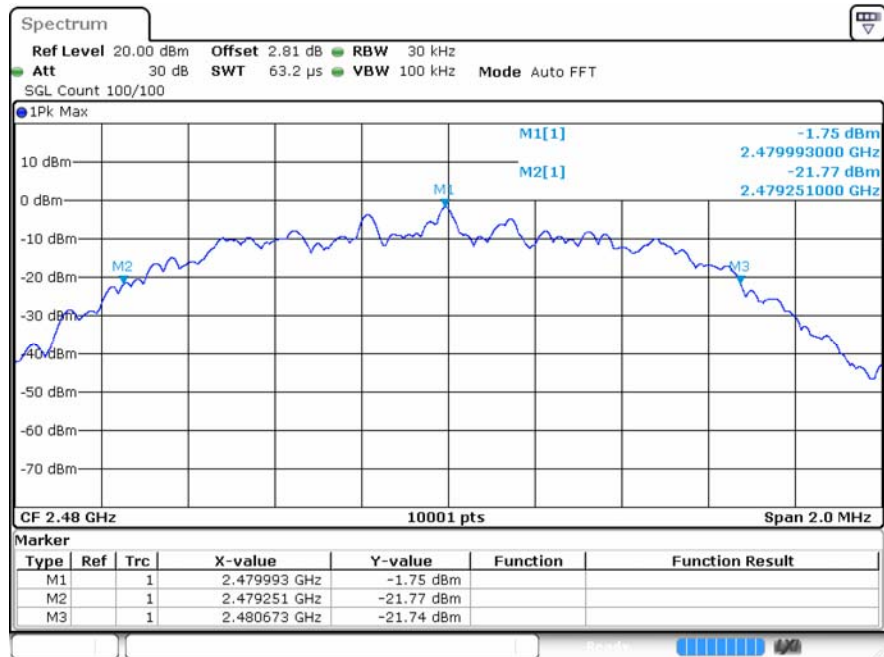
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.889	Not Specified	Pass
	MCH	0.869	Not Specified	Pass
	HCH	0.889	Not Specified	Pass
$\pi/4$ DQPSK	LCH	1.401	Not Specified	Pass
	MCH	1.42	Not Specified	Pass
	HCH	1.422	Not Specified	Pass

3.2 Test Graphs



GFSK/HCH


 $\pi/4$ DQPSK/LCH


$\pi/4$ DQPSK/MCH

 $\pi/4$ DQPSK/HCH


4 Carrier Frequency Separation

4.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.001	0.579	Pass
$\pi/4$ DQPSK	MCH	1.001	0.947	Pass

4.2 Test Graphs

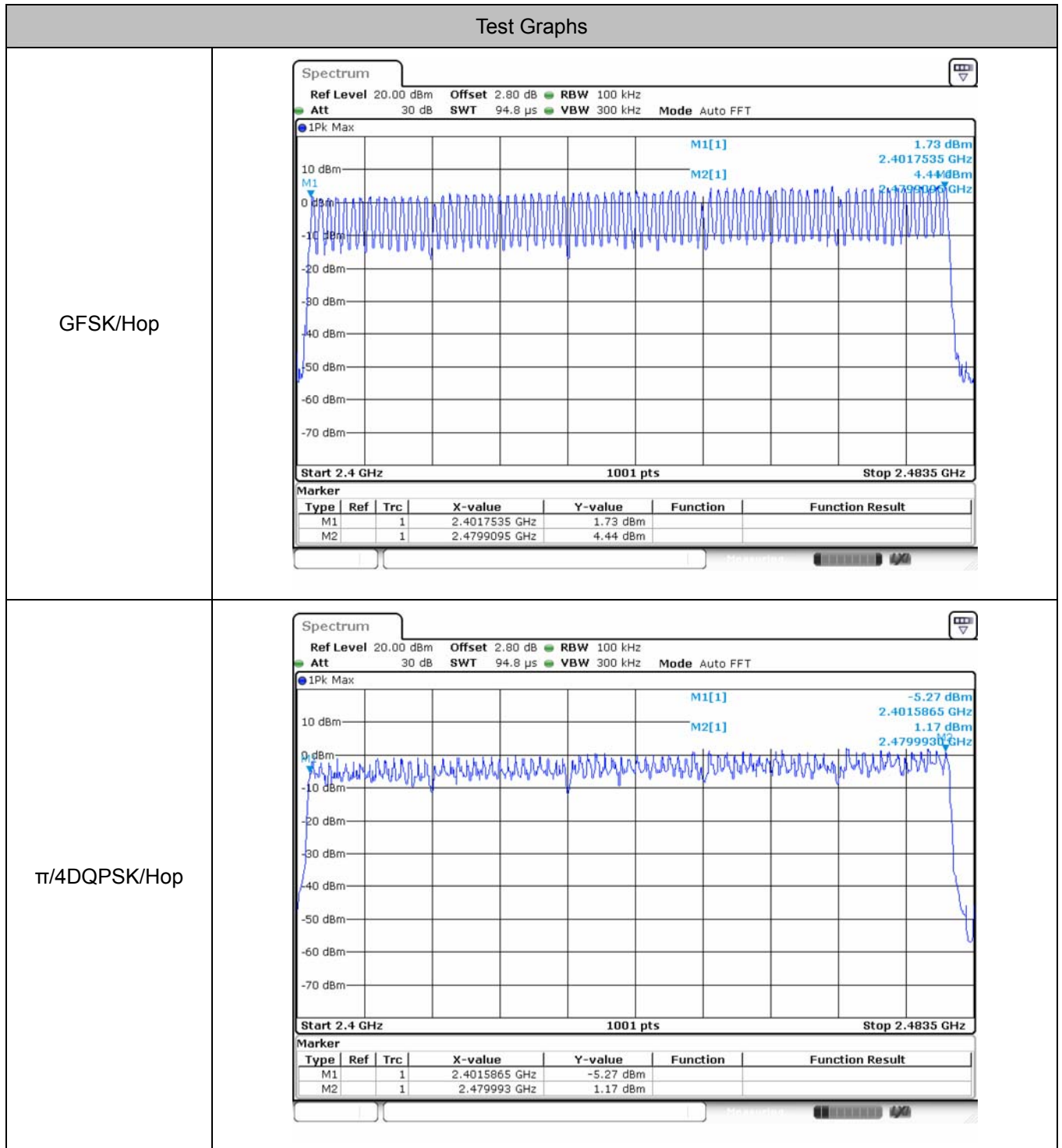


5 Hopping Channel Number

5.1 Test Result

Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS

5.2 Test Graphs



6 Dwell Time

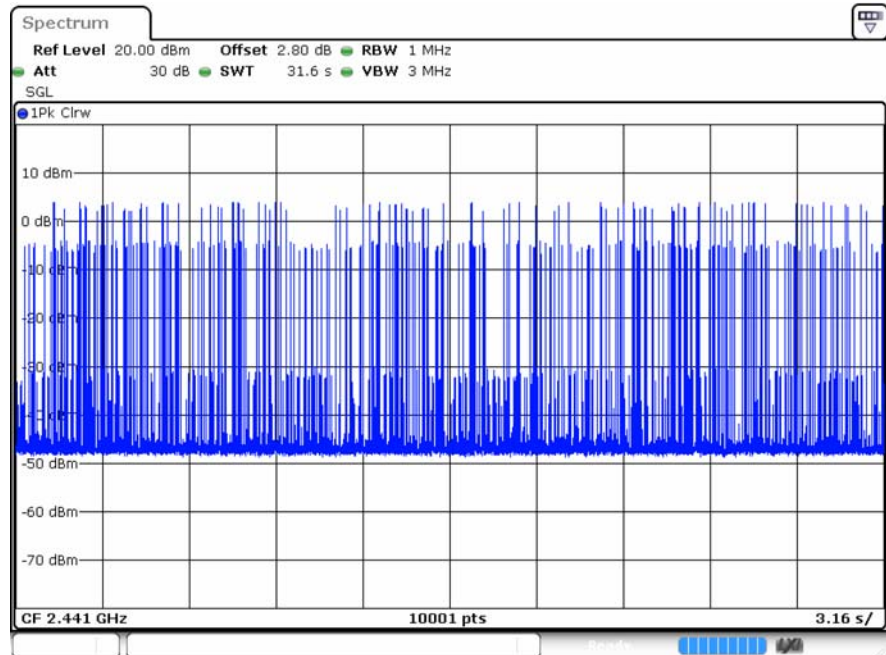
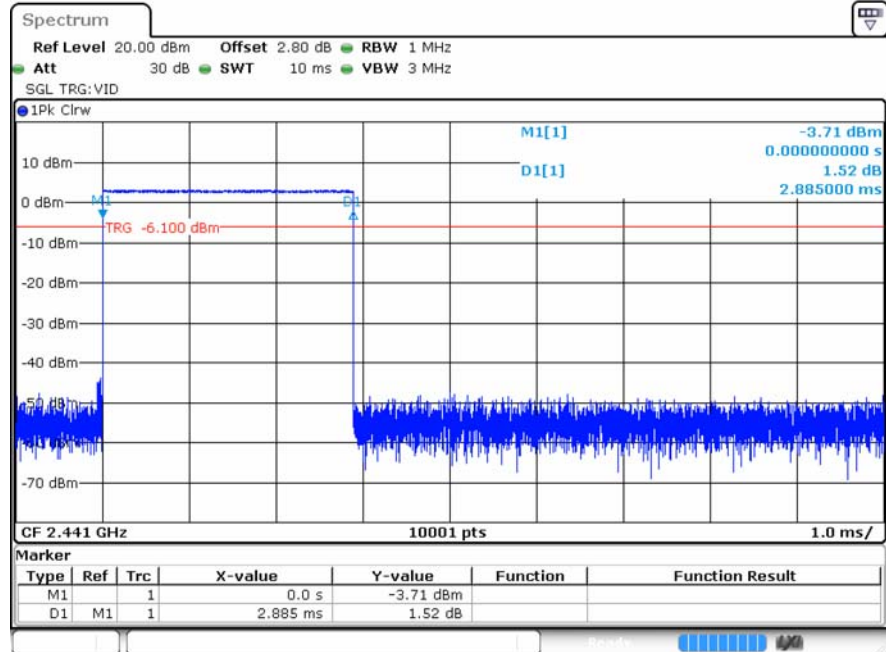
6.1 Test Result

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	MCH	2.885	102	294.27	0.4	Pass
$\pi/4$ DQPSK	2DH5	MCH	2.889	98	283.122	0.4	Pass

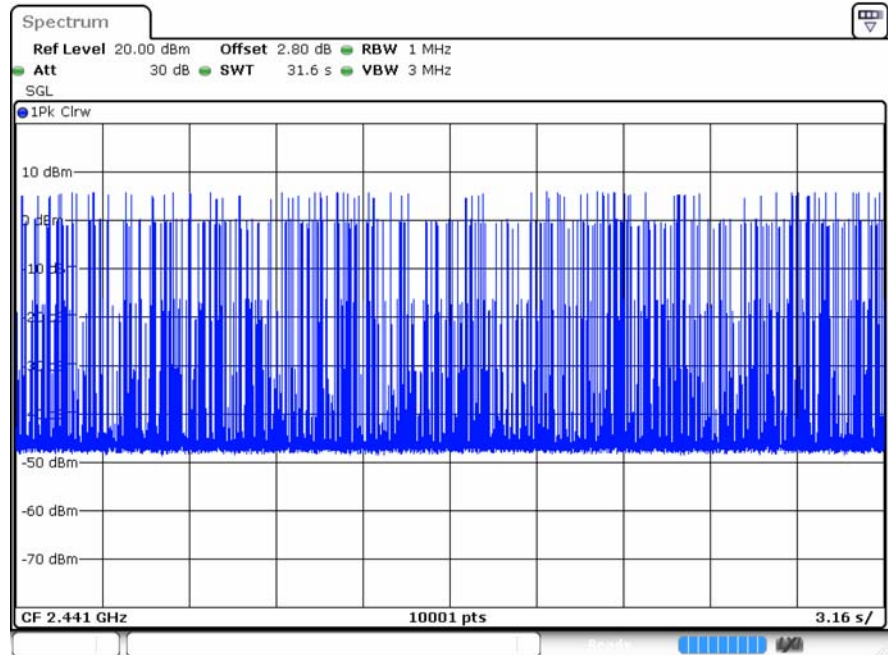
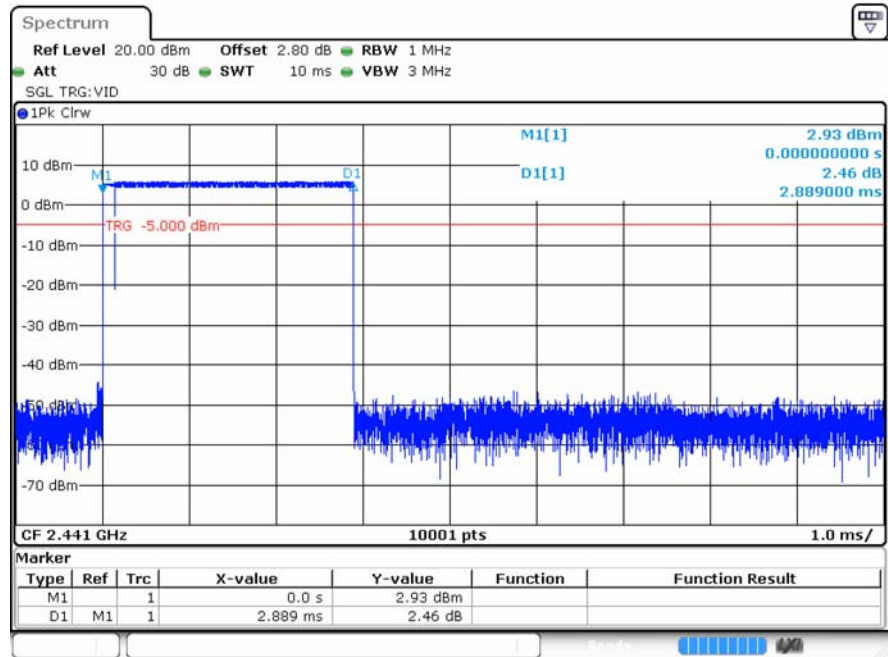
6.2 Test Graphs

Test Graphs

GFSK_DH5/MCH



$\pi/4$ DQPSK
_2DH5/MCH

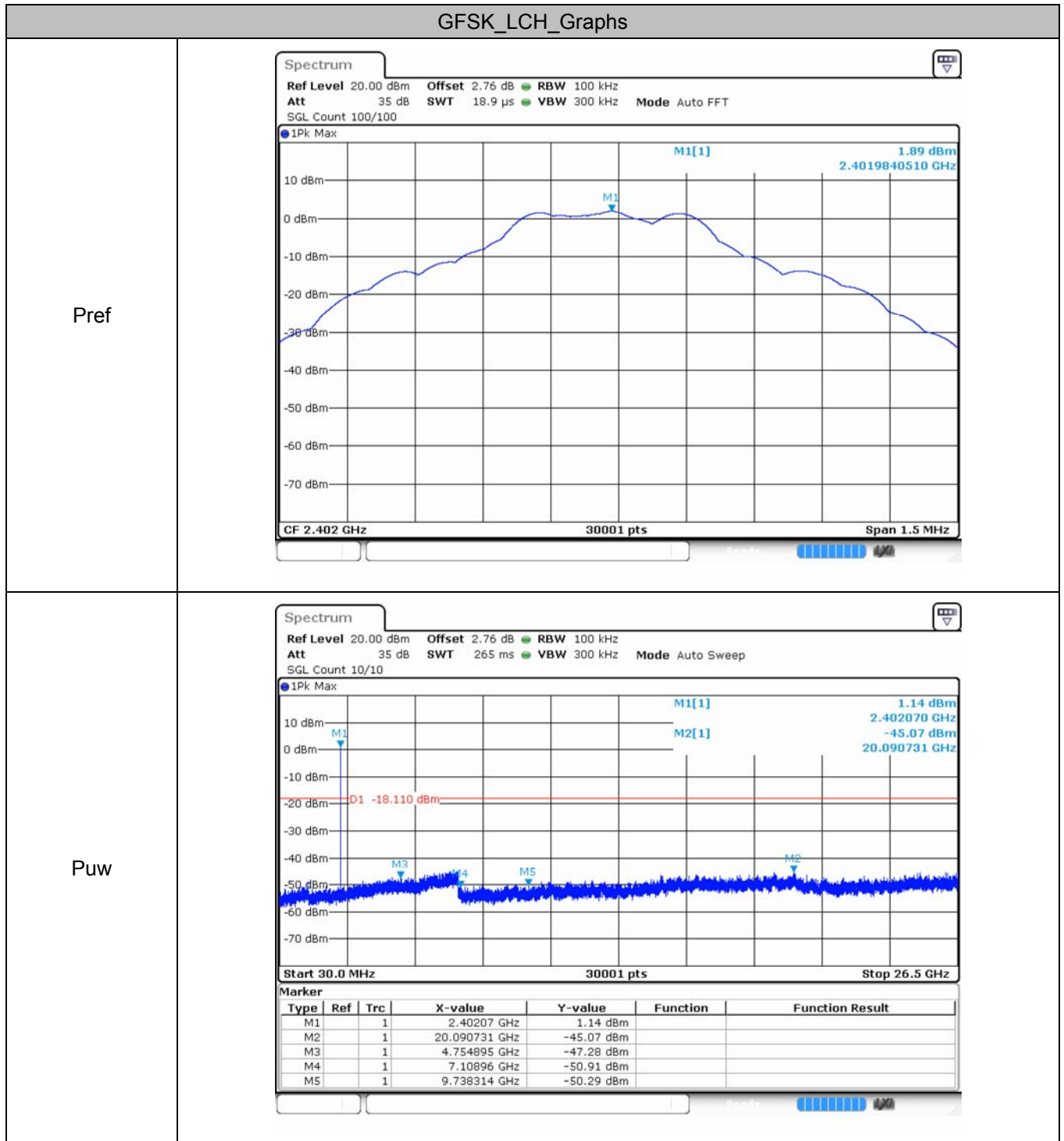


7 RF Conducted Spurious Emissions

7.1 Test Result

Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-46.95	-20	Pass
	MCH	-46.48	-20	Pass
	HCH	-46.69	-20	Pass
$\pi/4$ DQPSK	LCH	-42.61	-20	Pass
	MCH	-44.26	-20	Pass
	HCH	-43.8	-20	Pass

7.2 Test Graphs

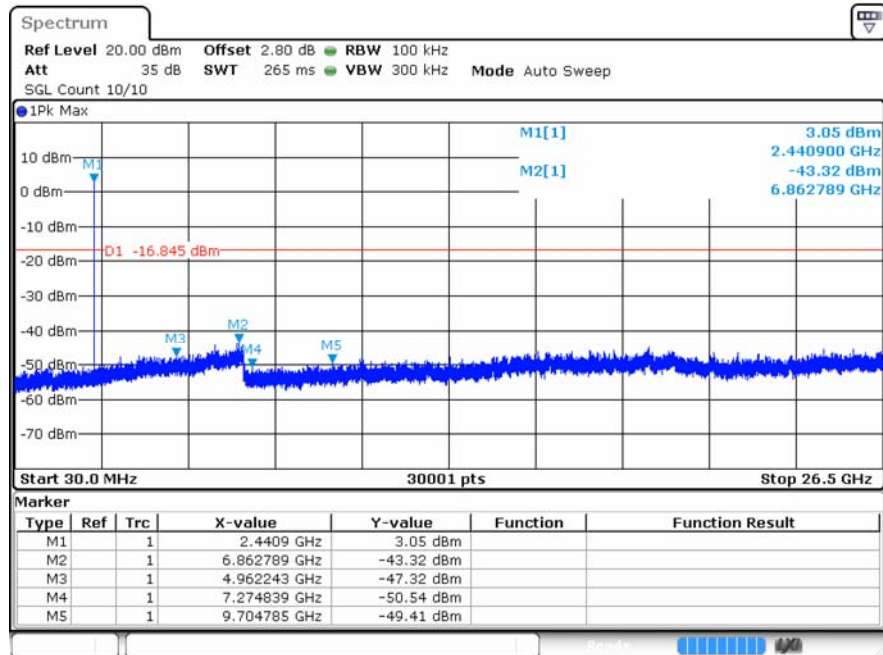


GFSK_MCH_Graphs

Pref



Puw

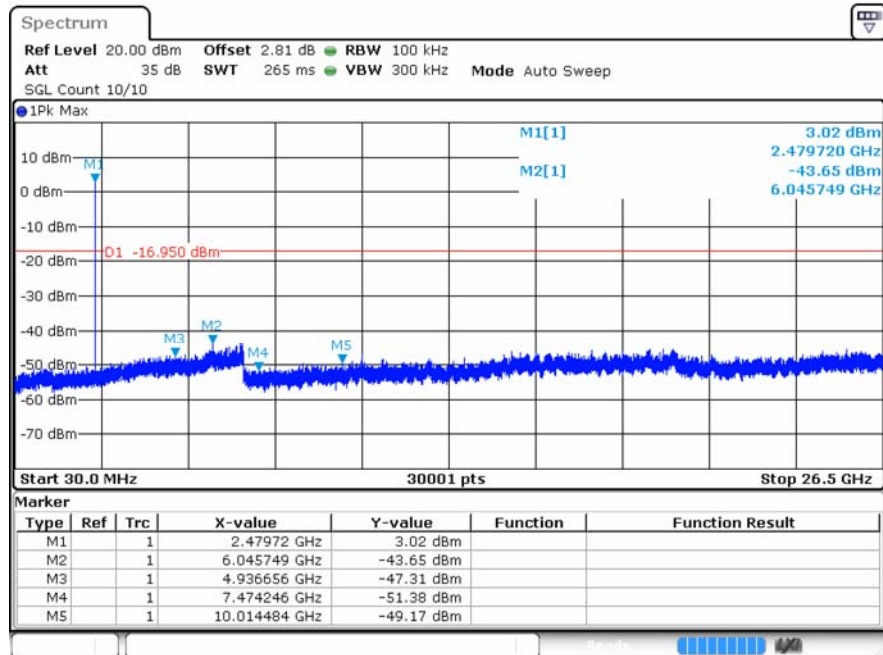


GFSK_HCH_Graphs

Pref

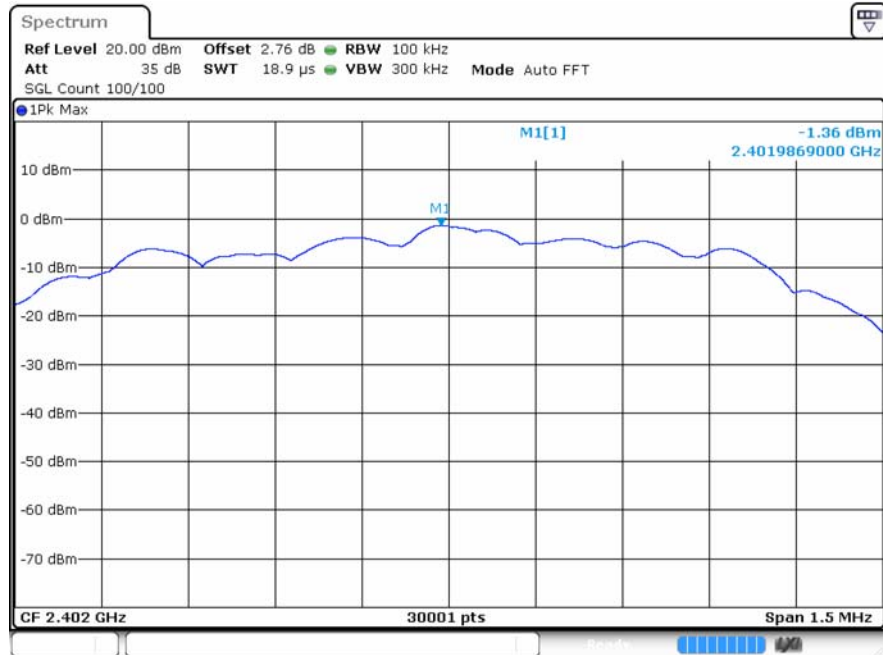


Puw

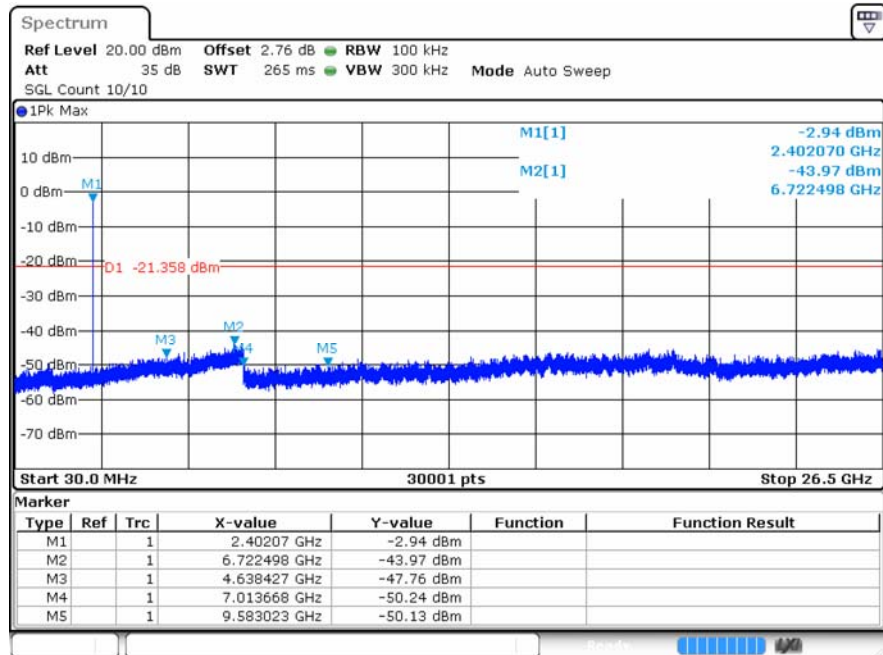


$\pi/4$ DQPSK_LCH_Graphs

Pref

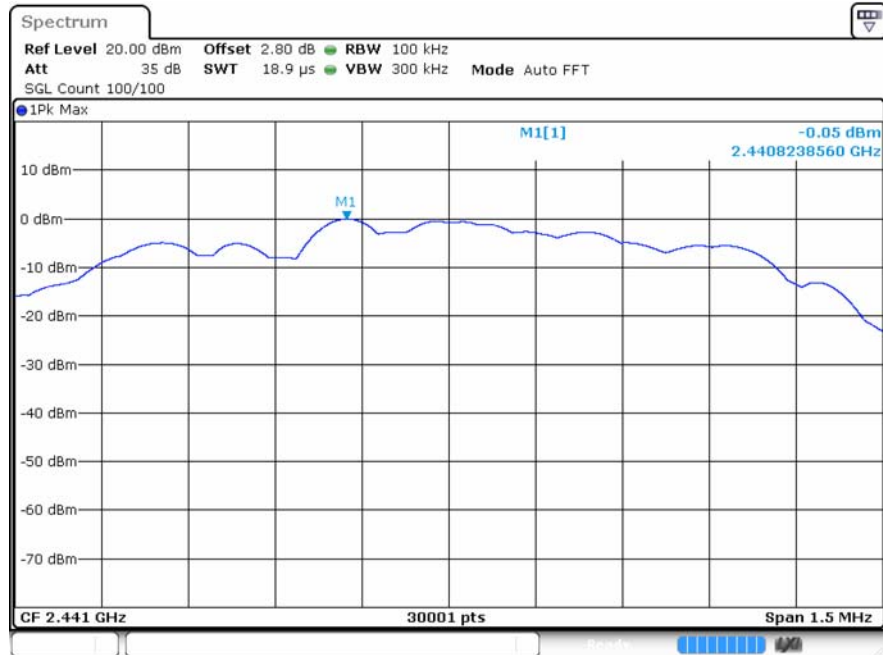


Puw

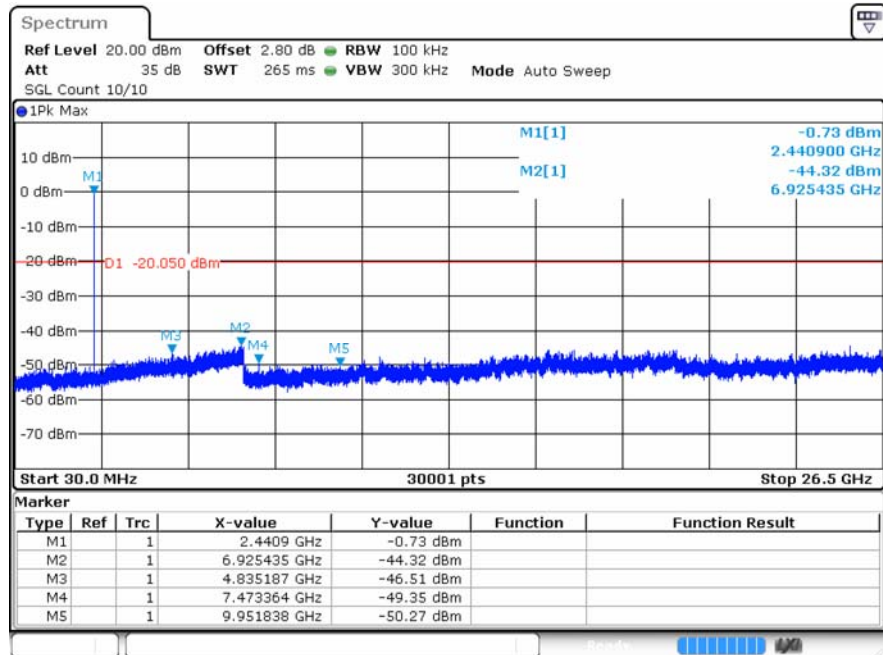


$\pi/4$ DQPSK_MCH_Graphs

Pref

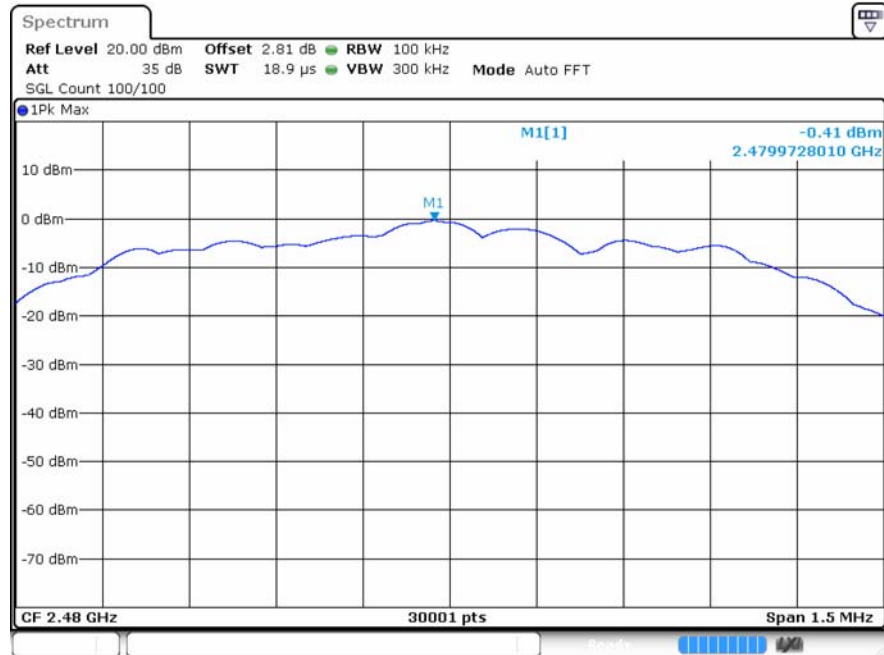


Puw

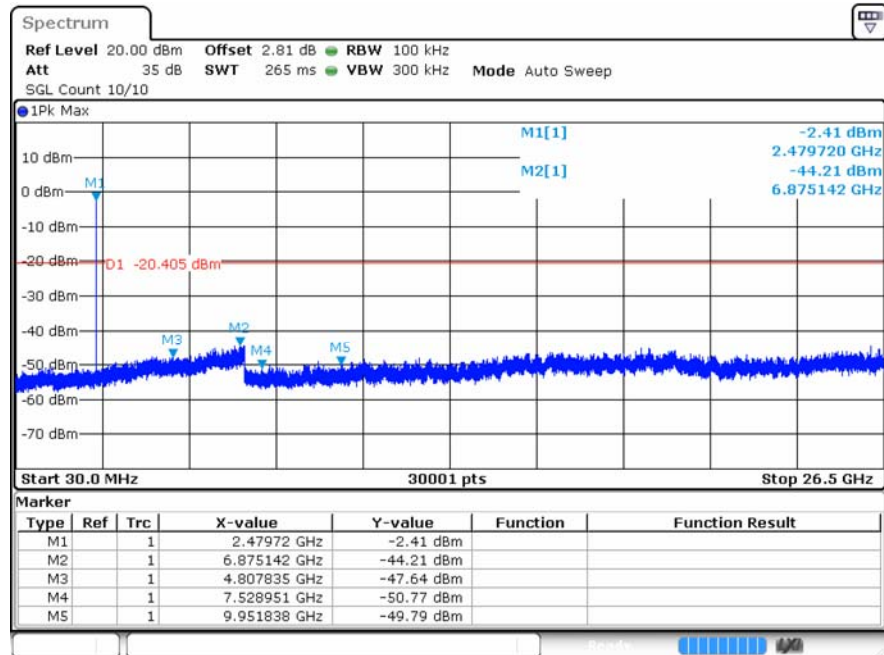


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

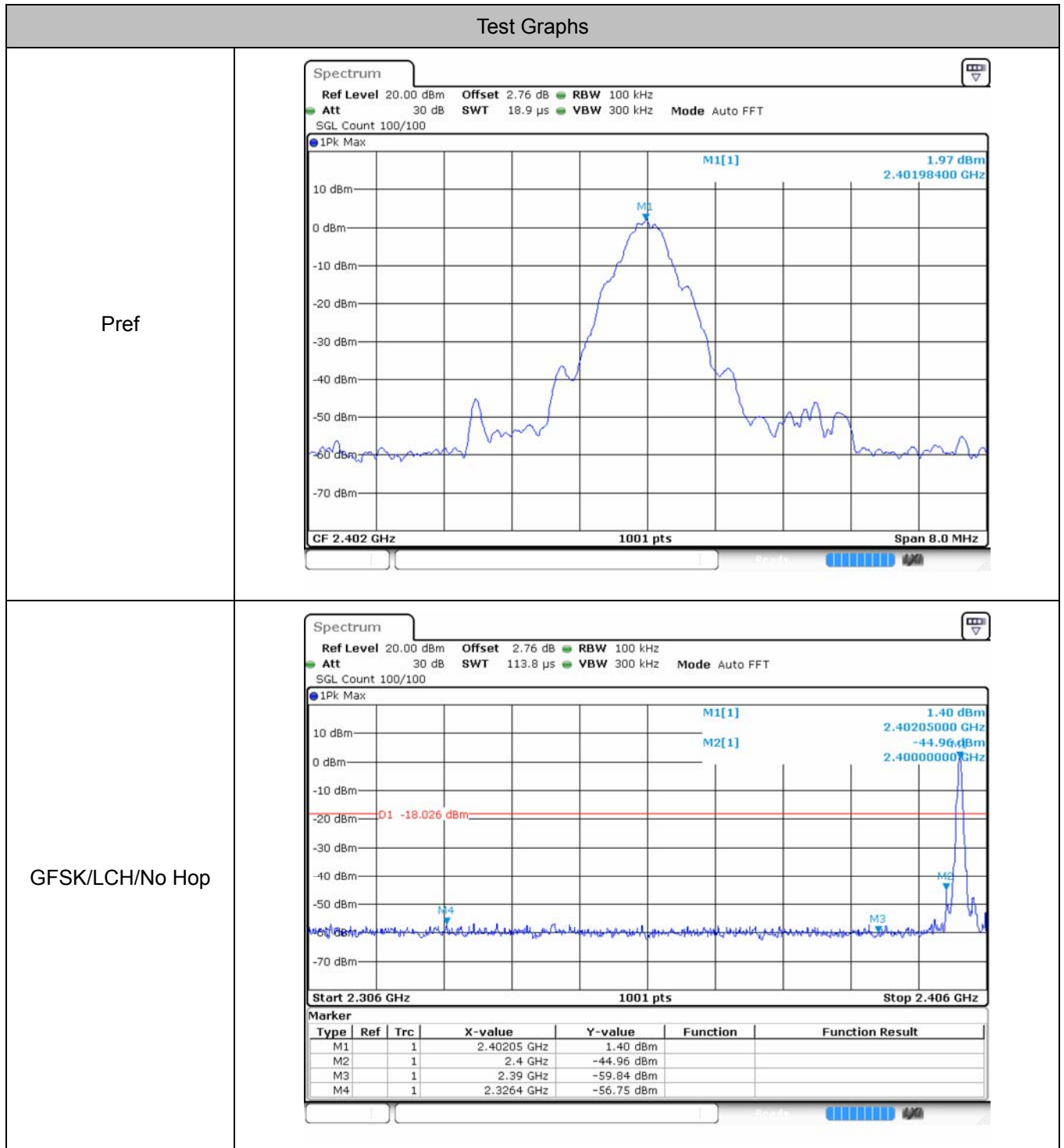


8 Band-edge for RF Conducted Emissions

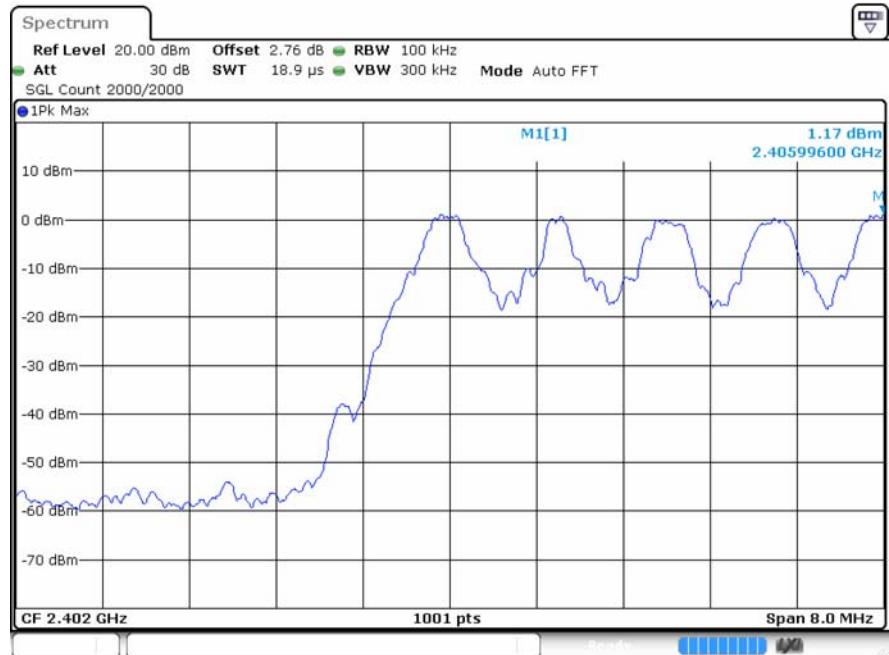
8.1 Test Result

Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	-58.72	-20	Pass
			On	-55.91	-20	Pass
	HCH	2480	Off	-49.96	-20	Pass
			On	-50.58	-20	Pass
$\pi/4$ DQPSK	LCH	2402	Off	-54.23	-20	Pass
			On	-53.84	-20	Pass
	HCH	2480	Off	-47.08	-20	Pass
			On	-47.13	-20	Pass

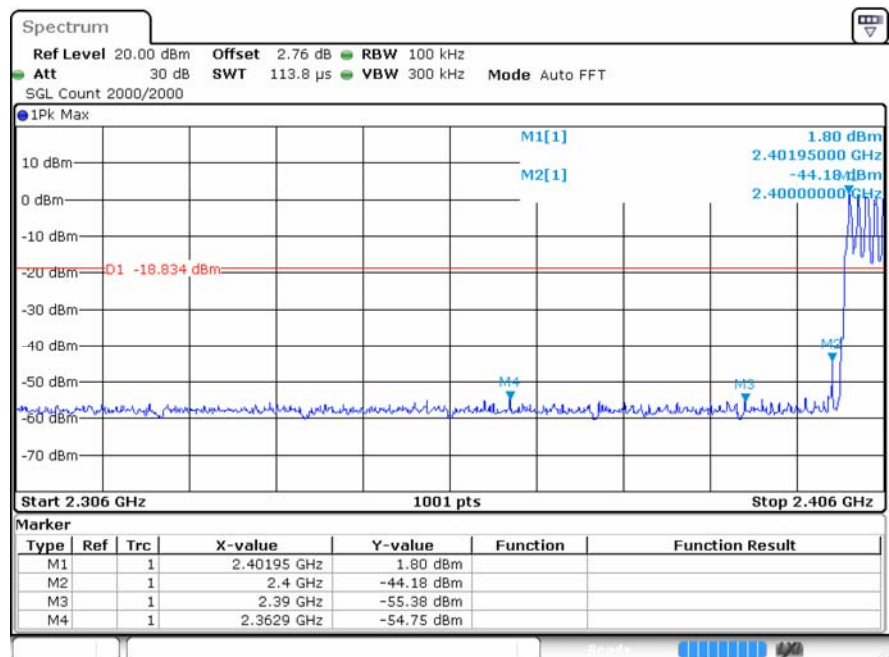
8.2 Test Graphs



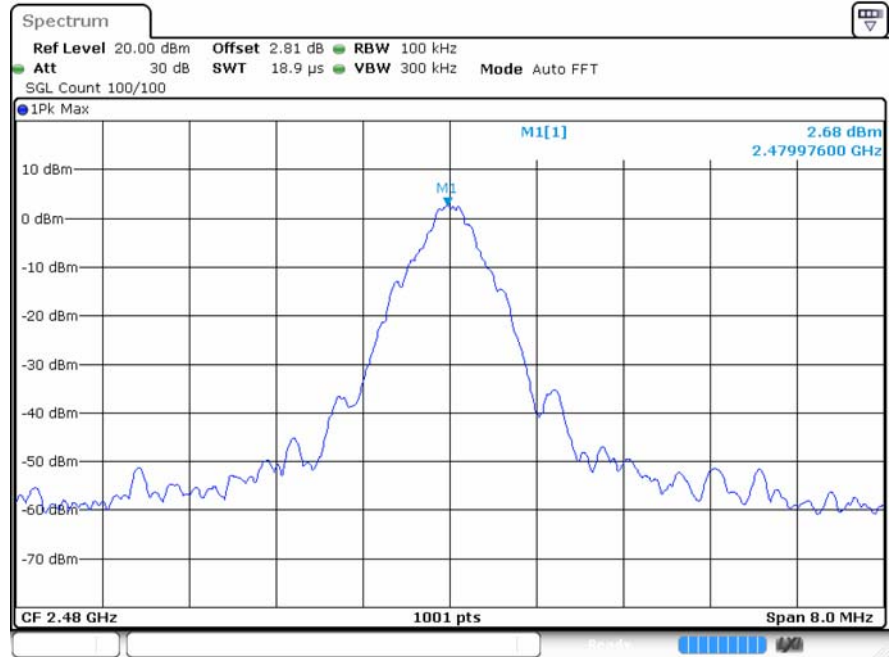
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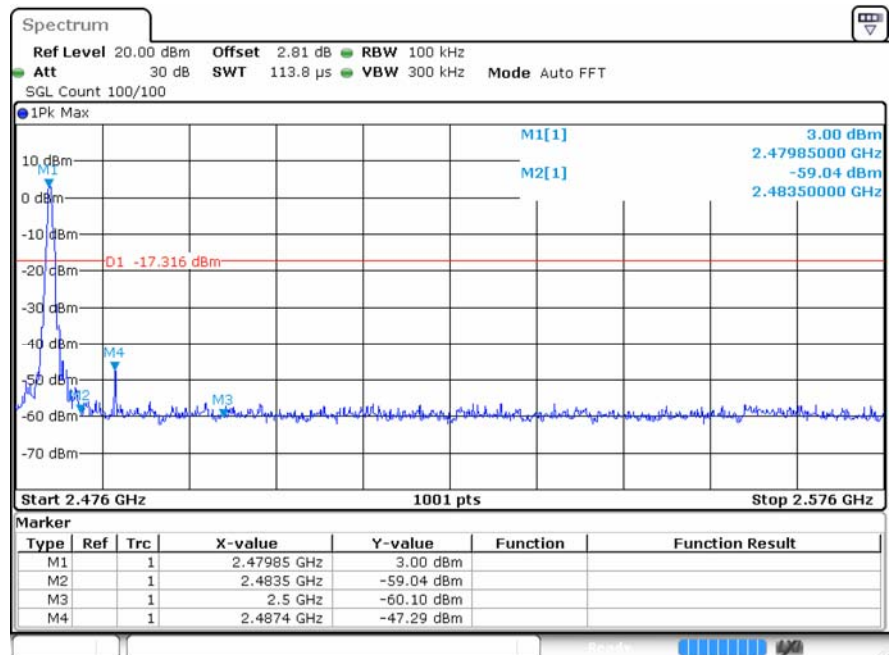
GFSK/LCH/Hop



Ref



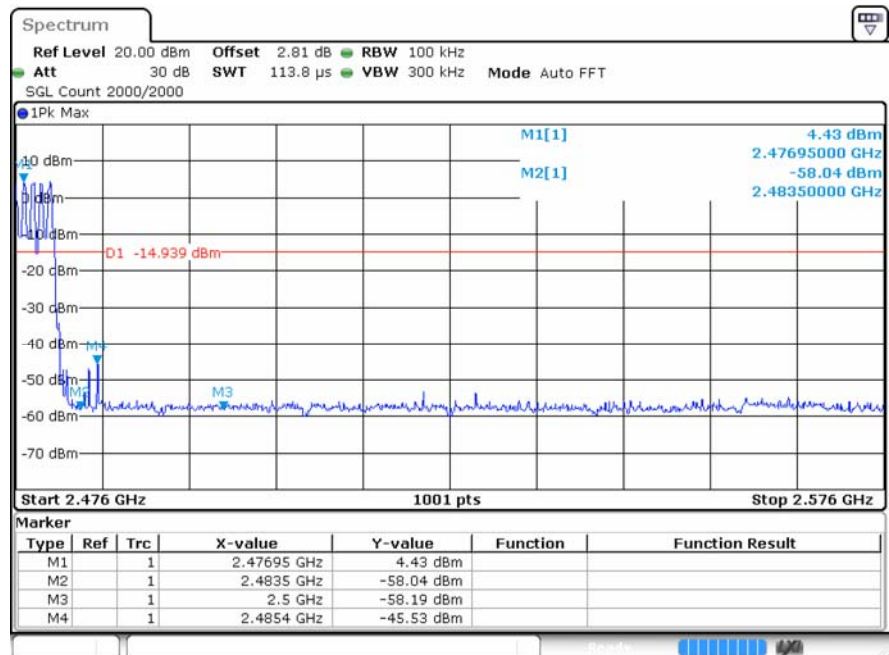
GFSK/HCH/No Hop



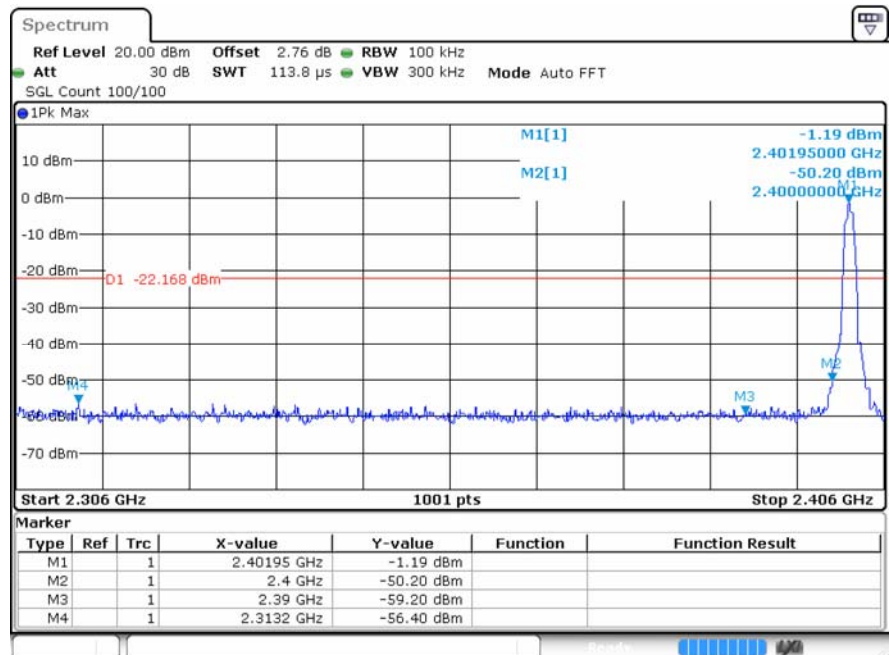
Ref.



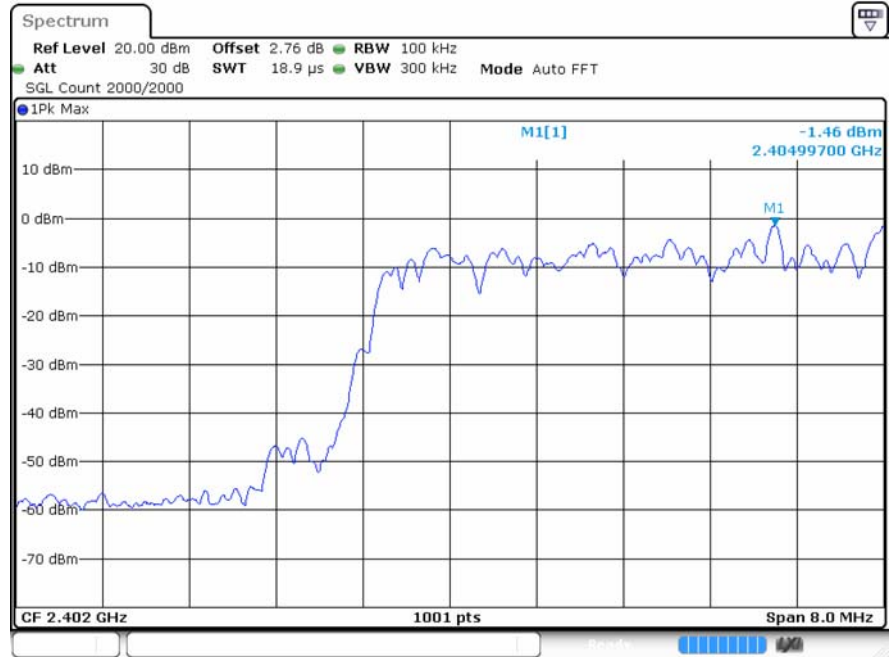
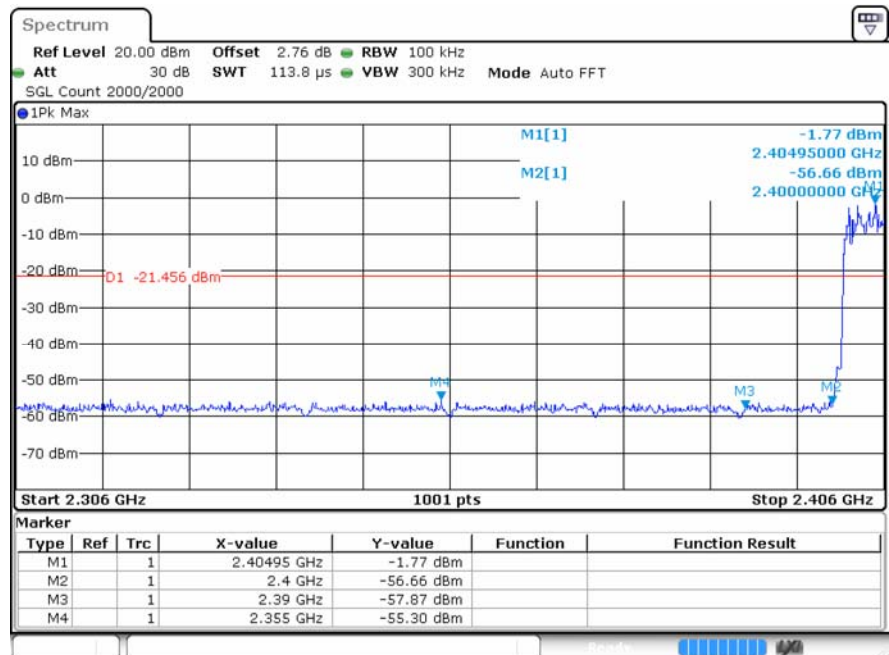
GFSK/HCH/Hop



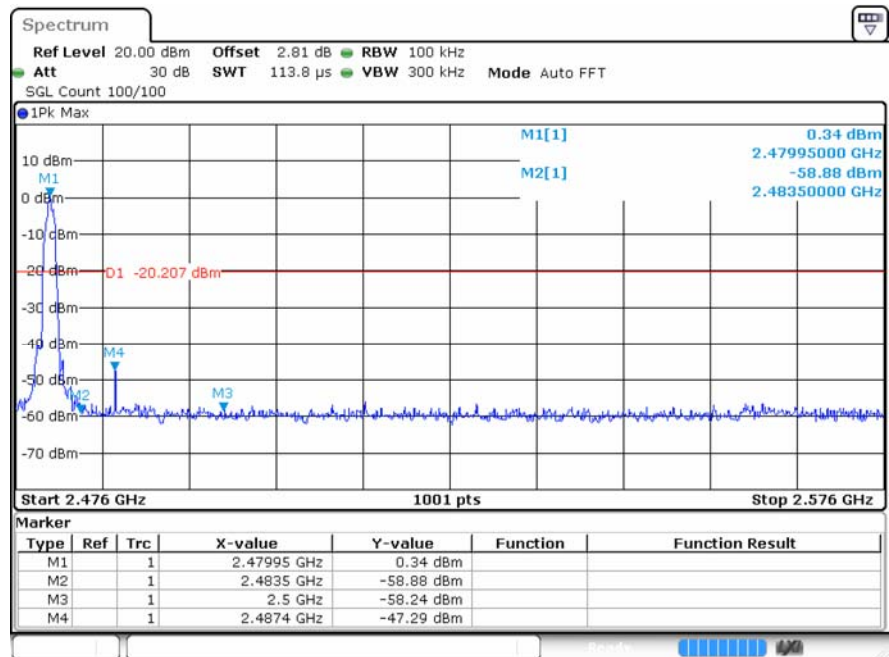
Ref


 $\pi/4$ DQPSK/LCH/No
Hop


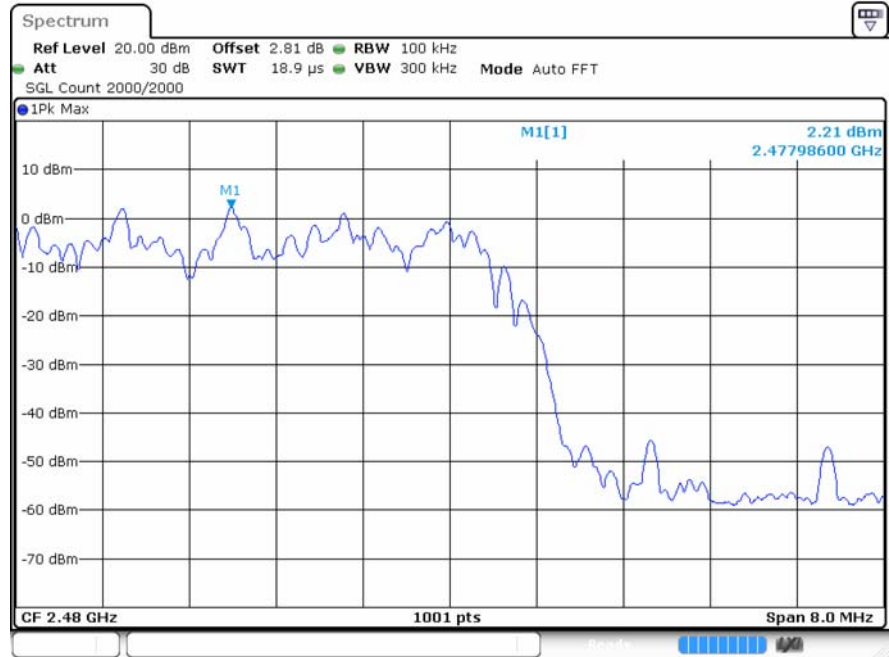
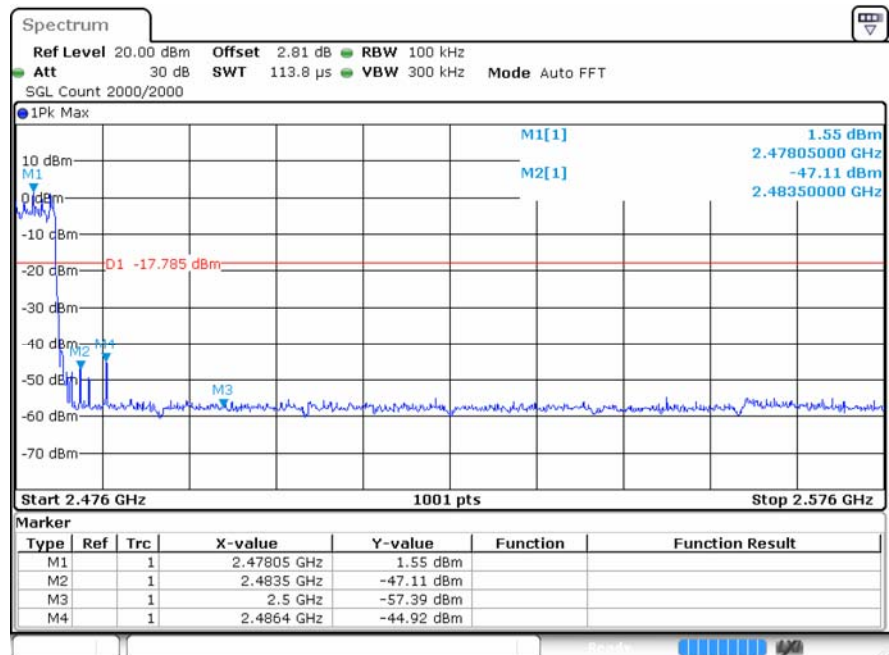
Ref


 $\pi/4$ DQPSK/LCH/Hop


Ref


 $\pi/4$ DQPSK/HCH/No
Hop


Ref


 $\pi/4$ DQPSK/HCH/Hop


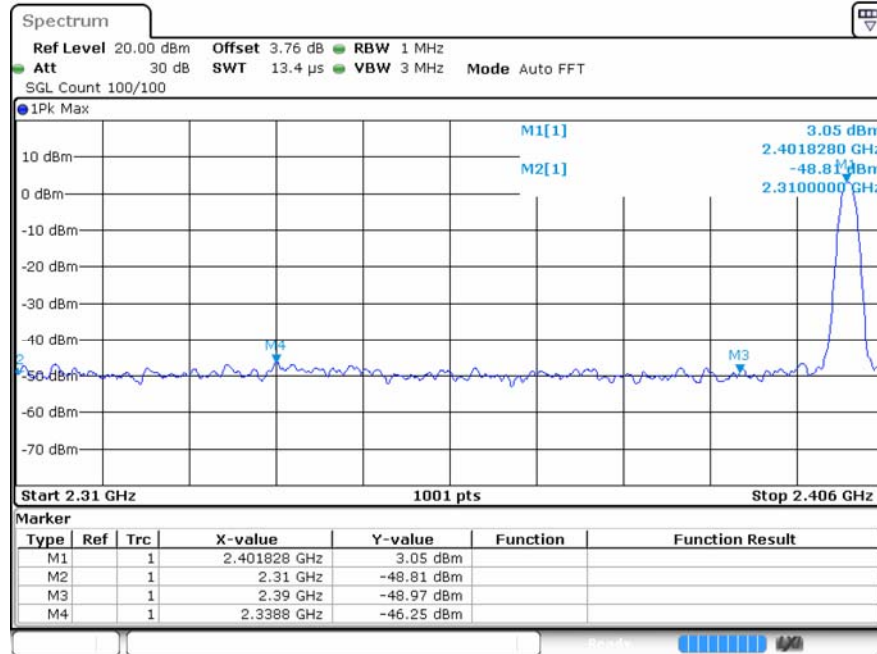
9 Restrict-band band-edge measurements

9.1 Test Result

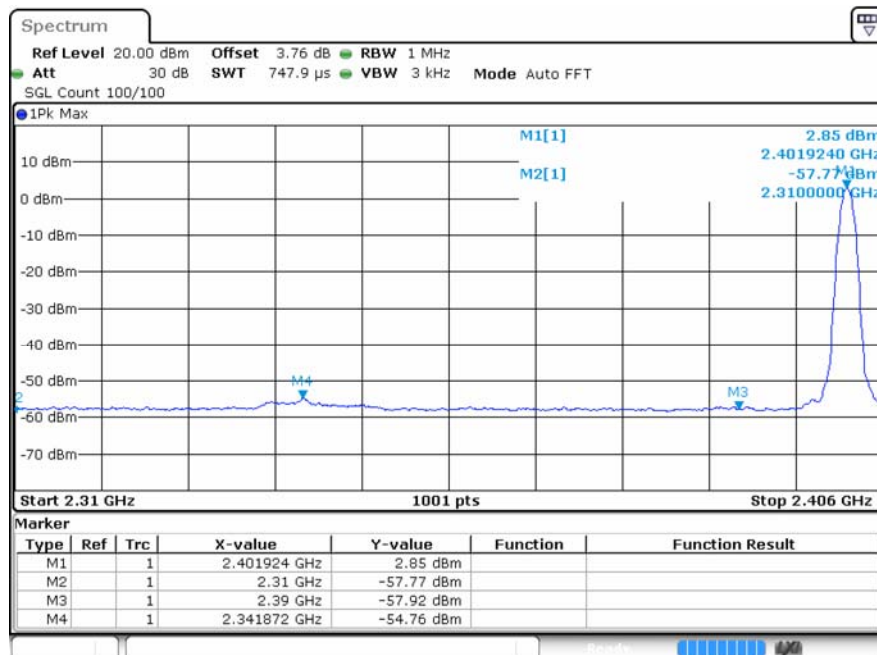
Test Mode	Hopping	Freq.	Power [dBm]	Gain	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-48.81	2	48.45	PEAK	74	Pass
	Off	2310.0	-57.77	2	39.49	AV	54	Pass
	Off	2338.8	-46.25	2	51.01	PEAK	74	Pass
	Off	2341.872	-54.76	2	42.5	AV	54	Pass
	Off	2390.0	-48.96	2	48.3	PEAK	74	Pass
	Off	2390.0	-57.91	2	39.35	AV	54	Pass
	Off	2483.5	-45.24	2	52.02	PEAK	74	Pass
	Off	2483.5	-54.9	2	42.36	AV	54	Pass
	Off	2483.512	-45.24	2	52.02	PEAK	74	Pass
	Off	2483.632	-54.78	2	42.48	AV	54	Pass
	Off	2500.0	-48.84	2	48.42	PEAK	74	Pass
	Off	2500.0	-57.12	2	40.14	AV	54	Pass
$\pi/4$ DQPSK	Off	2310.0	-49.99	2	47.27	PEAK	74	Pass
	Off	2310.0	-56.94	2	40.32	AV	54	Pass
	Off	2342.064	-45.52	2	51.74	PEAK	74	Pass
	Off	2340.048	-55.11	2	42.15	AV	54	Pass
	Off	2390.0	-51.06	2	46.2	PEAK	74	Pass
	Off	2390.0	-57.56	2	39.7	AV	54	Pass
	Off	2483.5	-47.52	2	49.74	PEAK	74	Pass
	Off	2483.5	-54.96	2	42.3	AV	54	Pass
	Off	2487.376	-41.64	2	55.62	PEAK	74	Pass
	Off	2483.512	-54.96	2	42.3	AV	54	Pass
	Off	2500.0	-48.47	2	48.79	PEAK	74	Pass
	Off	2500.0	-56.69	2	40.57	AV	54	Pass

9.2 Test Graphs

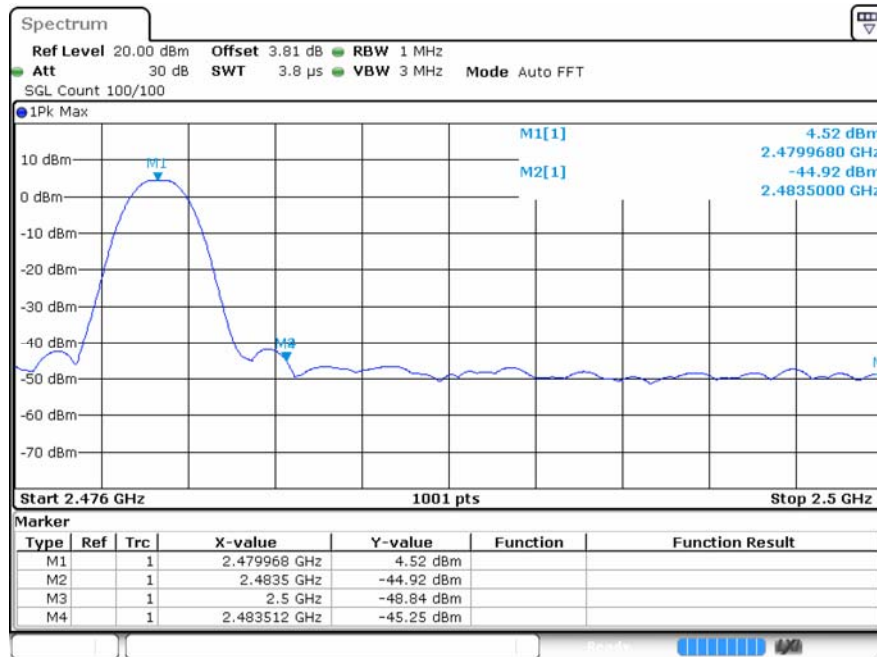
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



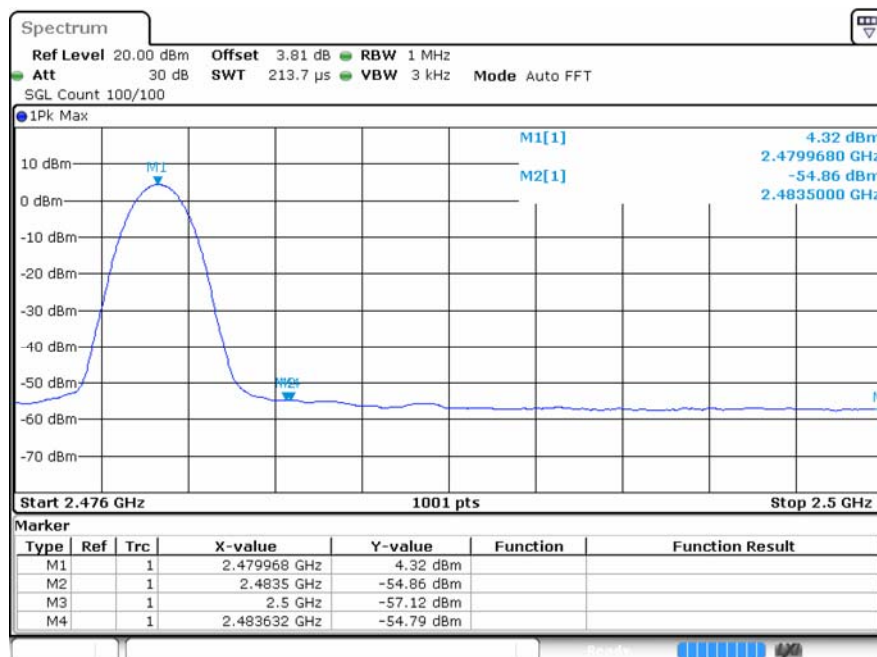
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



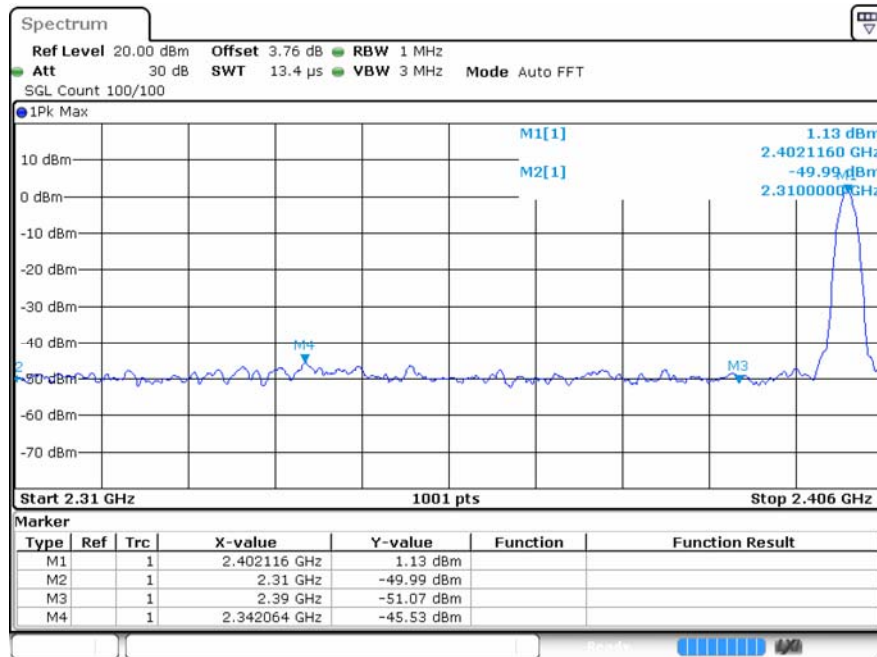
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



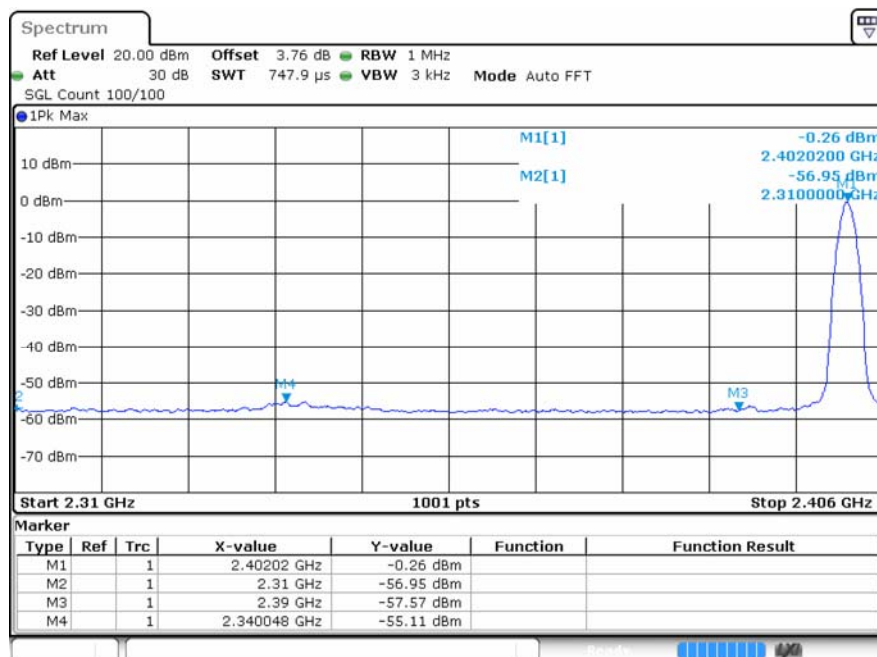
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



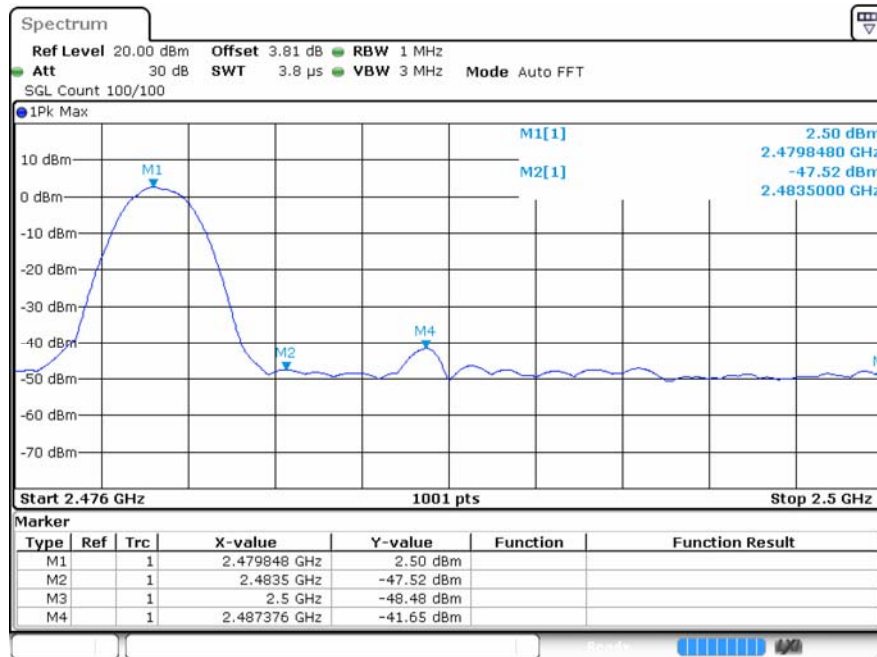
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



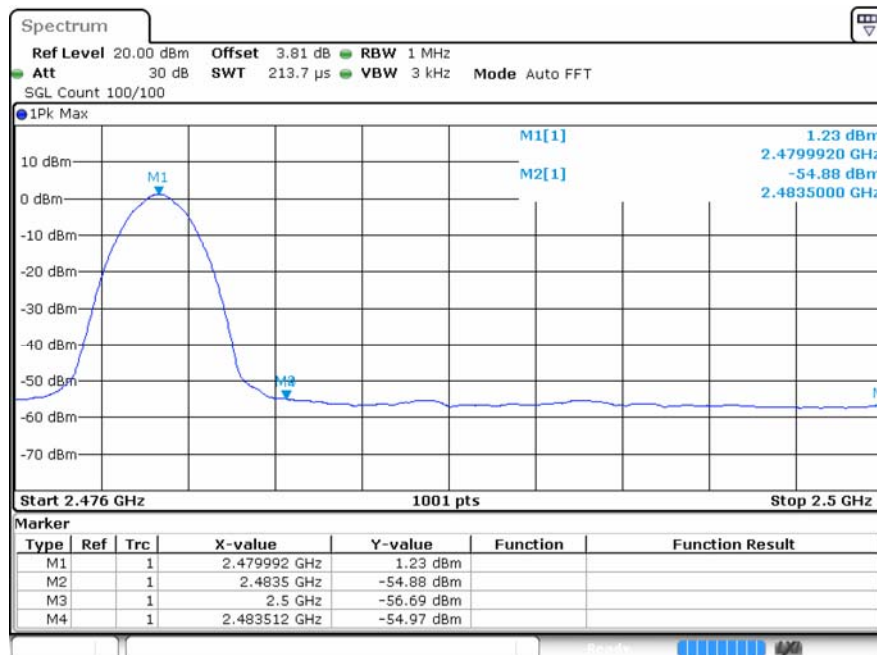
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



---The End---